

REMARKS

Claims 32 and 41-48 are pending in the application. Claim 32 is rejected under 35 USC 102(e) as being anticipated by Grover et al (US Pat. 6,790,680). Claims 41, 43, and 45-48 are rejected under 35 USC 103(a) as being unpatentable over Grover in view of Card (US Pat. 6,970,857). Claim 42 is rejected under 35 USC 103(a) as being unpatentable over Grover in view of Card, and in further view of Denuell (US Pat. 6,725,123). Claim 44 is rejected under 35 USC 103(a) as being unpatentable over Grover in view of Card, and in further view of Buda (US Pat. 6,611,724).

Claims 32, 41, 44, and 45 are amended. Claim 43 is canceled, and its elements are added to claim 41. Claims 32, 41, 42, and 44-48 are presented for examination. Claims 32 and 41 are independent. No new matter is added, and the subject matter of the claims is not changed by these amendments.

Response to rejections under 35 USC 102(e)

The following features distinguish Applicants' invention as claimed from that of Grover:

1) Grover requires two different failures to occur in two different tools (abstract; col. 9, lines 31-44; FIG 4 elements 405 and 410; throughout, and all claims). Only then can a failure analysis be made, depending on whether any operating conditions were common to both tools at the time of their failures. In contrast, Applicant detects correlations among continuous process variables, and separates causes from effects to isolate a cause of a fault. Applicant does not require two tools to fail before analysis is performed or action is taken, thus eliminating steps that were perceived to be needed in Grover. This feature is recited in independent claim 32 as follows:

Claim 32: "an evaluation unit that determines correlations between the detected process variables and the time and location of the failure; by time-correlating an effect of the failure detected in the process variables with a location on the production line of a cause of the failure based on a production speed, without a need for detecting a second failure;"

This amendment is supported in paragraphs 10 and 13 of the substitute specification.

2) Applicants' detection system as claimed is fully or partially independent of the automation process control system. On Applicants' page 2, lines 21-22: "the measuring bus system being such that it is not identical to existing bus systems used for automation". On page 17, lines 22-26: "The decoupling of the measuring and analysis devices from existing automation devices of the industrial process also allows not only a high level of freedom from retroaction when detecting measuring data but also uniform measuring data detection and analysis in the event of modifications within the industrial process." In contrast, Grover obtains all measurements from the Advanced Process Control (APC) framework that controls the industrial process (col. 5, lines 48-52, FIG 1). Applicants' independent measuring system offers substantial advantages in avoiding feedback (termed "retroaction" in the specification), and in accuracy and timeliness, by bypassing automation control bus failures, delays, and reconfigurations. It also allows a direct comparison and analysis of process variables before and after a control bus modification. This feature is recited in independent claim 32.

Claim 32: "a detection unit separate from the existing automation system and from the existing automation control bus that directly detects process variables at selected measuring points on the production line and the time and location of a failure without passing through the existing automation system or the existing automation control bus;"

In "Response to Arguments" Examiner cites Grover FIG 1 as teaching a measuring bus that is separate from the automation system. However, FIG 1 of Grover clearly shows the measuring system 100 connected to the Advanced Process Control (APC) framework 120. Every signal from each equipment interface 110 and from each additional sensor 115 in FIG 1 must go through the APC framework. The APC framework of Grover corresponds to Applicants' existing automation system of claim 32. Applicants' FIG 1 shows at least some sensors, such as photoelectric barriers 9, connected directly from the production line 8, 60 to the detection unit 3.

Response to rejections under 35 USC 103(a)

Arguments 1) and 2) above also apply under 35 USC 103(a) to claim 41, because the proposed combination with Card does not address these issues.

Claim 41: "excluding correlations that indicate a consequential effect, and not a cause of the failure indication, and determining the cause of the failure indication without a need for detecting a second failure;"

Claim 41: "wherein the production line comprises an automation system and control bus that automate the production line, and wherein the measuring of at least some of the selected variables is performed directly from at least some of the measuring points on the production line without passing through the control bus."

On page 3 of the Office Action, Examiner cites col. 10, line 20 to col. 11, line 39 of Grover as teaching the exclusion of correlations that indicate a consequential effect and not a cause of the failure indication. However, these lines teach correlating conditions in common during two different failures in two different tools. Applicants' invention as claimed does not require two different failures for diagnosis.

Regarding claim 42: Deneull teaches a method for locating defects in a web of material during production by marking the web itself with position indicators (abstract). The defect can then be relocated by rewinding the web. This is a completely different method and function from locating a position of a failure in a production line. Applicants' system time-stamps the measured process data, and locates a position on the production line where a failure occurred based on the speed of the moving web of material (page 8, line 27 to page 9, line 6). Thus, combining Denuell with Grover and Card does not produce the invention as claimed in claims 32 or 42.

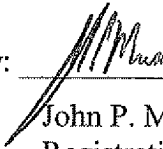
Conclusion

For anticipation under 35 U.S.C. 102, a reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present (MPEP 706.02(a) IV). The identical invention must be shown in as complete detail as recited in the claim, and the elements must be arranged as required by the claim (MPEP §2131). Since the independent claims 32 and 41 recite features not found or inherently present in Grover, as argued above, a 35 USC 102 rejection is not supported. Card does not address these missing features in the independent claims. Denuell does not teach locating a failure point in a production line. Thus, the proposed combination with Denuell cannot produce this feature as claimed in claims 32 or 42. The remaining claims should be allowed as containing the limitations of an allowable claim 41. Therefore, Applicant respectfully requests reconsideration of the rejections, and allowance of this application

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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By: 
John P. Musone
Registration No. 44,961
(407) 736-6449

Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, New Jersey 08830